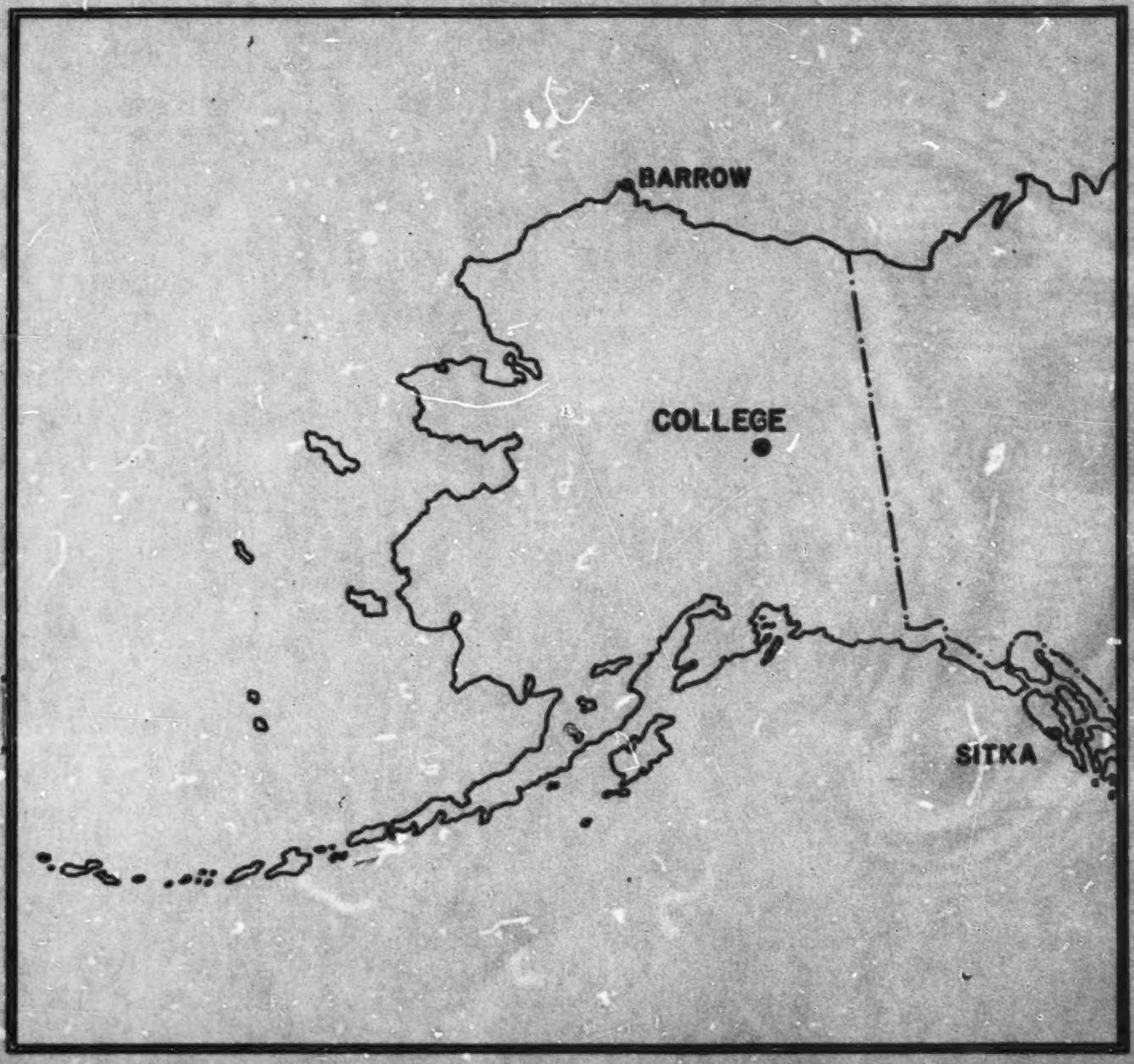
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

NOVEMBER 1980 OPEN FILE REPORT 80-300K



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Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J.E. PAPP, E.A. SAUTER, AND S.P. TILTON, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations, as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
Yukon Drive on West Ridge
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A-NOAA
Environmental Data Service
Boulder, Colorado 80302

OBSERVATORY LOCATION

The College Observatory, operated by the U. S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64°51.6'N
Geographic longitude.....147°50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm, and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available are mean hourly scalings, K-Indices, selected magnetic phenomena reports, and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index. The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK. The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak*
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 <1000	6	80
1000 <1650	7	140
1650 <2500	8	240
2500+	9	400 (10γ)

The Magnetic Daily Character Figure, C. To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1 if it is moderately disturbed; C=2 if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0≤ 11	0
11≤ 50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal & Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

Principal Magnetic Storms

Gradual and sudden commencemen magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H, and Z elements. The value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines, and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D = B_D + d \cdot S_D$; $H = B_H + h \cdot S_H$; $Z = B_Z + z \cdot S_Z$
where D, H, and Z are absolute values;
B_D, B_H and B_Z are base-line values;
S_D, S_H and S_Z are scale values;
and d, h, and z are scalings in millimeters.

NOAA FORM 76-133 (9-72) U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: NOVEMBER 1980

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	2	3	6	5	5	5	2	1	29	32
2	1	1	2	2	3	3	3	0	15	08
3	0	0	4	4	3	2	1	0	14	10
4	0	1	2	6	2	2	3	1	17	15
5	1	0	1	2	0	0	1	1	06	02
6	0	1	2	1	2	2	1	1	10	04
7	1	1	0	0	1	1	0	1	05	02
8	0	0	0	1	0	1	1	1	04	02
9	0	0	0	2	3	4	1	0	10	07
10	1	2	1	5	5	2	1	1	18	15
11	1	3	4	4	3	3	5	3	26	21
12	3	2	3	4	4	1	2	1	20	13
13	1	0	1	3	2	1	1	1	10	05
14	1	0	0	4	4	5	1	1	16	14
15	3	4	5	6	5	6	3	3	35	41
16	2	3	4	5	5	5	2	1	27	25
17	1	1	2	4	4	3	2	2	19	12
18	1	1	3	5	5	4	2	2	23	20
19	3	3	5	5	4	4	2	2	28	24
20	2	1	5	5	5	5	3	1	27	28
21	1	4	4	3	1	2	1	1	17	11
22	1	1	3	2	1	1	0	0	09	04
23	2	1	1	0	0	3	3	2	12	06
24	2	4	4	3	2	3	1	2	21	14
25	2	2	3	2	5	5	3	3	25	20
26	2	5	4	6	6	3	2	1	29	33
27	3	2	4	5	5	4	3	2	28	24
28	4	3	6	6	5	3	3	2	32	36
29	2	2	6	6	5	3	2	2	28	31
30	2	2	1	4	5	4	4	3	25	20
31										

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)

BEGIN d	BEGIN h	BEGIN m	END d	END h	END m

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.81		(γ/mm)
LOWER LIMIT FOR K = 9	2560	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

NOAA FORM 76-133 SUPERSEDES C&GS FORM 818

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-781-887

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: NOVEMBER

YEAR: 1980

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
24	2257	si*	
24	23XX	pc4	
25	03XX	pc5	
25	15XX	pc3	
26	0423	si*	With pc5

IDENTIFIED BY: JBT

VERIFIED BY: JEP

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

NOVEMBER 1980

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day	hr
CO	64.6 N	15	02XX	..	..	..	..	15	4,6	6	155	1260	560	16	19
		27	07XX	..	..	..	..	28	3,4	6	186	1390	890	29	23
								29	3,4	6					

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: NOVEMBER 1980

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 11-1-80	2400 U.T., 11-30-80	1.0'/mm	3.7 γ/mm	27° 46.9' E
H	0000 U.T., 11-1-80	2400 U.T., 11-10-80	7.8 γ/mm		12758 γ
	0000 U.T., 11-11-80	2400 U.T., 11-30-80	"		12754 γ
Z	0000 U.T., 11-1-80	2400 U.T., 11-30-80	7.7 γ/mm		55143 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 11-1-80	2400 U.T., 11-30-80	7.8'/mm	29.7 γ/mm	23° 47.9' E
H	0000 U.T., 11-1-80	2400 U.T., 11-30-80	44.0 γ/mm		11518 γ
Z	0000 U.T., 11-1-80	2400 U.T., 11-30-80	48.5 γ/mm		54028 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 06.8' E	12992 γ	55379 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: NOV 2, 3, 5, 6, 7, 8, 9, 13, 22, 23

FORM 75-136

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
Denver, CO 80225

Values are in tenths of gam, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1508 M.T.) is hour 11 of the 0800 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	FILE-MENT
CO	80	NOV	D

C	Q or S	You Q	Day	01	02	03	04	05	06	07	08	09	10	11	12	Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	161	177	176	159	182	159	221	-124*	178	98	233	408	01	324	272	226	398	241	132	206	203	221	207	203	200	4861
			02	200	191	179	167	166	189	182	171	201	201	191	226	02	224	255	257	268	247	272	211	199	200	203	196	201	4997
			03	200	189	178	178	179	176	181	171	128	146	245	247	03	219	253	210	262	263	251	231	246	237	221	207	201	5019
			04	188	178	169	160	197	151	156	139	128	189	218*	201	04	188	221	221	228	229	248	231	208	182	184	180	177	4571
			05	171	158	173	178	177	178	173	177	206	162	178	198	05	217	219	221	229	231	229	244	249	239	217	200	200	4824
			06	191	184	177	178	169	178	209	152	169	164	178	190	06	207	228	229	221	219	260	253	269	261	213	167	159	4825
			07	161	149	141	145	151	171	168	176	181	189	206	198	07	198	200	209	217	223	240	254	242	231	206	208	193	4657
			08	167	168	162	170	171	172	171	183	189	192	200	209	08	203	197	203	223	229	249	203	226	231	214	207	194	4733
			09	181	169	167	158	169	175	167	182	183	191	197	189	09	296	252	279	249	337	324	307	291	231	211	181	169	5255
			10	161	151	161	127	159	169	188	188	187	189	344	227	10	239	289	231*	183	231	253	256	257	222	207	198	160	4977
			11	149	137	128	98	161	178	189	161	250	171	141	221	11	190	201	201	231	231	257	168	78	172	168	187	157	4225
			12	112	158	158	138	138	170	184	208	228	185	174	210	12	182	230	190	203	217	240	248	249	229	219	181	156	4607
			13	153	171	187	181	181	187	181	180	179	177	139	177	13	191	207	200	215	237	259	249	236	206	169	184	177	4623
			14	157	161	154	151	172	181	180	187	181	188	186	199	14	292	180	261	242	229	288	321	259	221	196	187	177	4950
			15	159	130	139	130	136	131	211	151	141*	262	274	467*	15	236*	442*	386	298	364*	229	204	191	158	151	189	179	5358
			16	177	161	168	102	138	132	173	151	139	253*	70*	413	16	369	421	514*	403	308	148	239	251	231	212	203	187	5563
			17	200	191	188	183	186	182	182	169	197	187	169	206	17	278	369	241	239	221	201	219	180	221	233	169	187	5018
			18	193	181	187	190	188	162	199	162	191	190	173*	165*	18	332	272	278	221	265	181	171	168	121	123	159	161	4633
			19	151	164	162	171	179	180	173	190	218	111	129	221	19	276	242	380	175	261	238	161	173	139	128	141	170	4535
			20	171	179	182	172	159	176	168	162	134*	177	172	203	20	241	273	313	641*	341	186	239	181	137	163	167	161	5098
			21	161	163	171	171	141	240	129	181	222	201	211	187	21	184	201	208	213	211	220	229	221	209	181	163	151	4569
			22	141	151	164	183	151	147	153	199	163	159	131	163	22	198	201	223	217	221	227	233	221	222	209	201	179	4457
			23	161	147	150	169	178	188	179	184	180	187	190	199	23	207	209	213	230	282	289	344	199	214	176	184	170	4829
			24	130	146	150	119	120	103	164	170	170	186	169	194	24	200	207	255	223	241	220	240	239	170	175	161	164	4316
			25	170	183	166	130	132	129	158	130	190	210	190	181	25	230	326	172	246	232	269	270	203	142	10	94	125	4288
			26	210	171	171	170	140	137	172	170	107	156	186	221*	26	586*	256	223	190	231	236	219	209	208	199	196	188	4952
			27	169	141	142	158	163	169	140	173	198	311	181	261	27	380*	468*	515*	361	291	241	218	191	159	138	128	161	5457
			28	128	91	120	169	121	191	161	203	256	365*	229*	301*	28	309*	450	269	258	221	186	192	213	211	188	99	100	5031
			29	152	162	181	199	178	183	171	-24*	110*	170	178	419*	29	347	341	220	213	218	291	221	199	197	169	121	110	4666
			30	137	151	168	178	163	197	198	188	208	191	145	181	30	157	198	221	254	299	331	250	31	68	156	161	158	4389
			31													31													

SCALED BY	SPT, JEP
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] Scaling uncertain because of magnetic storm.
< > Record all absent for part or all of hour; if value is given, curve was continued for missing part.
☐ No record; or no values available because of faulty record.
* Derived from Storm High., converted to Normal High.

MONTHLY SUM	144283
MONTHLY MEAN	200
DATES WITH GAPS	

GPO 000-000

FORM 75-186

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
Denver, CO 80225

Values are in tenths of gam, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (15 M.S.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	80	NOV	H

C	Qual 1	Qual 2	Day (UT)	01	02	03	04	05	06	07	08	09	10	11	12	Day (UT)	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	316	307	309	329	313	362	346	193*	236	231	-151*	-107	01	37	53	292	59	37	297	331	326	316	307	301	303	5799
			02	291	289	300	311	309	316	319	321	343	329	329	269	02	229	231	198	249	243	223	238	289	284	287	292	291	6780
			03	281	282	291	300	310	310	311	329	331	233	277	269	03	249	191	201	249	286	304	314	309	299	294	291	284	6795
			04	289	299	302	306	320	336	335	381	398	167*	-252*	73	04	320	339	319	309	309	289	223	229	291	290	291	293	6456
			05	301	311	304	309	316	316	315	320	339	343	326	319	05	319	319	319	311	313	319	311	300	290	283	291	293	7487
			06	295	296	307	310	316	320	333	338	337	331	339	329	06	319	300	269	259	319	311	316	305	297	283	289	283	7401
			07	287	303	319	329	323	331	327	320	317	319	319	321	07	320	320	312	311	309	309	300	299	297	294	294	281	7461
			08	286	300	309	310	309	315	321	319	320	321	329	320	08	315	317	321	316	311	291	273	294	297	294	290	294	7372
			09	299	301	314	324	328	329	327	323	324	327	329	329	09	231	211	285	316	156	149	291	296	284	286	294	290	6943
			10	299	307	321	321	330	341	348	337	336	332	255	279	10	271	104	169	356	331	319	311	307	301	300	299	297	7171
			11	296	313	317	391	364	333	334	344	258	337	394	301	11	311	291	309	301	313	279	3	-8	269	245	281	321	6897
			12	351	343	411	389	343	338	349	344	331	293	153	139	12	191	226	309	316	321	316	305	300	293	287	279	289	7216
			13	300	309	309	317	319	322	321	321	329	330	359	349	13	319	314	289	317	330	311	284	289	288	278	281	287	7466
			14	300	309	329	334	322	325	330	327	335	329	326	329	14	203	356	249	4	247	320	292	309	295	286	290	297	7043
			15	306	311	369	373	573	549	344	343	180	135	21	-416*	15	69	-139*	-176	-167*	-155*	231	263	275	238	265	301	319	4412
			16	311	329	317	411	387	397	436	419	269	112	36	9	16	-59	-51	-178*	-164	46	289	361	339	323	324	319	307	5289
			17	305	320	321	321	319	321	347	367	331	320	209	87	17	81	121	309	319	297	299	292	300	314	301	297	301	6799
			18	311	328	319	321	321	331	338	361	339	331	92*	153	18	173	12	97	287	191	181	273	296	297	304	298	303	6257
			19	327	319	346	371	326	319	327	361	131	81	224	107	19	127	241	45	-24	119	307	333	298	289	319	303	321	5917
			20	316	306	310	321	331	325	347	340	189	246	291	77	20	86	-89*	-41	-29	114	279	338	350	311	313	323	326	5680
			21	331	324	330	339	418	449	379	377	279	239	224	233	21	333	325	323	316	313	309	317	306	299	297	291	310	7661
			22	324	339	343	346	351	349	343	396	331	351	349	348	22	331	319	311	319	329	321	319	310	303	304	294	289	7913
			23	300	338	322	319	319	323	321	320	328	329	333	324	23	323	327	323	294	244	229	232	254	301	314	311	291	7314
			24	323	330	344	375	417	542	548	414	396	355	370	315	24	302	274	251	272	250	321	320	310	307	300	311	325	8272
			25	331	340	354	381	389	399	371	440	420	320	339	300	25	261	-65*	-178*	68	302	323	322	311	267	268	309	327	6899
			26	310	309	329	326	371	379	411	566	519	541	321	53*	26	-190*	226	298	337	296	311	303	321	311	312	311	345	7576
			27	297	309	369	343	333	339	384	319	343	134	181	-34	27	-223*	-331*	-122*	164	229	174	309	291	259	301	301	310	4979
			28	340	416	449	387	434	364	307	449	181	-218*	-240*	-162*	28	-173*	-8	166	266	271	269	329	324	299	279	279	269	5277
			29	331	330	319	348	350	338	391	273*	177*	312	253	-190*	29	-54*	91	297	341	354	293	311	291	300	259	250	297	6262
			30	334	324	351	364	353	329	331	347	359	359	361	231	30	-60*	237	257	246	186	161	13	139	241	251	263	319	6296
			31													31													

SCALED BY	SPT, JEP
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] Scaling uncertain because of magnetic storm.
□ No record; or no values available because of faulty record.
< > Record all about for part or all of hour; if value is given, curve was estimated for missing part.
* Derived from Storm High., converted to Normal High.

MONTHLY SUM	201090
MONTHLY MEAN	279
DATES WITH GAPS	

GPO 842-999

FORM 76-186

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

Values are in tenths of mm, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSV.	YEAR	MONTH	ELEMENT
CO	80	NOV	Z

C.	Q or S	Yes Q	Hr. Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	330	328	319	340	351	318	296	245*	311	239	411	283	01	307	397	254	298	253	257	299	291	301	306	311	321	7307
			02	320	317	314	321	345	327	311	314	321	309	311	293	02	256	261	278	260	271	249	278	271	279	298	300	309	7113
			03	311	310	311	304	307	311	316	311	273	266	271	251	03	247	247	227	218	221	229	251	286	294	301	308	311	6682
			04	317	318	319	320	341	343	360	350	300	393	453*	537	04	342	320	317	317	318	316	297	267	290	321	323	330	8111
			05	331	336	336	330	327	327	328	333	320	277	316	320	05	319	311	310	310	316	314	317	311	314	317	317	318	7655
			06	319	319	316	316	315	323	319	316	330	327	335	330	06	320	310	277	247	283	299	306	317	313	309	308	321	7475
			07	323	328	333	331	357	344	331	322	320	317	307	309	07	311	311	310	311	312	319	324	320	318	320	325	326	7729
			08	320	324	320	320	320	321	321	325	319	320	318	303	08	300	304	310	311	316	319	289	277	290	306	316	317	7486
			09	316	314	311	312	315	315	313	321	317	317	310	301	09	270	229	226	271	267	217	239	269	282	291	292	301	6916
			10	309	310	309	310	318	320	321	314	310	301	233	281	10	267	224	188	300	330	333	327	316	311	316	310	316	7174
			11	321	324	328	356	361	358	339	337	244	182	305	319	11	336	311	300	298	309	291	177	129	209	269	321	339	7063
			12	340	357	351	332	360	377	352	331	309	169	177	268	12	333	327	310	319	323	322	322	320	320	321	320	320	7580
			13	321	329	330	325	324	322	319	319	319	329	290	340	13	338	324	291	294	316	313	305	296	290	296	309	320	7559
			14	326	327	329	333	330	323	327	320	323	326	327	279	14	147	219	308	257	187	274	271	290	317	315	319	327	7101
			15	331	329	353	337	357	407	409	351	319	341	337	391*	15	99	277*	158	48	113*	211	271	249	267	281	326	330	6892
			16	333	340	341	372	389	407	416	341	281	267	321	318	16	351	273	417*	61	47	161	284	331	329	331	330	328	7369
			17	330	329	329	326	328	330	340	339	337	326	295	267	17	177	250	237	289	267	269	269	281	314	321	327	336	7213
			18	351	341	347	346	331	336	357	329	334	333	241	229	18	267	188	64	168	183	207	207	228	271	310	340	351	6659
			19	340	336	349	347	328	331	340	339	291	291	323	369	19	138	219	314	251	111	138	248	270	296	317	331	339	6956
			20	340	334	330	327	340	358	341	299	181	218	279	361	20	459	419	341	318	267	187	246	277	286	311	321	325	7465
			21	329	328	325	323	333	411	361	379	267	263	218	229	21	299	319	317	319	320	320	314	311	303	303	305	319	7515
			22	324	330	333	326	329	341	358	360	334	323	310	331	22	339	330	327	310	321	319	320	319	319	314	320	320	7857
			23	325	339	338	342	338	327	319	320	319	318	320	318	23	311	311	317	310	278	249	230	225	250	281	310	316	7311
			24	327	338	331	340	350	336	325	411	338	276	330	330	24	315	290	259	278	261	297	310	301	290	308	310	320	7621
			25	319	317	317	352	380	385	350	360	369	333	319	303	25	322	437	342	90	228	260	269	281	281	227	241	289	7371
			26	322	310	310	310	309	323	341	287	344	351	330	380*	26	229*	104	210	300	307	307	309	319	327	328	327	324	7308
			27	324	338	371	338	333	339	350	336	328	246	248	321	27	453	482*	278	209	238	197	211	241	277	299	314	331	7402
			28	349	397	387	369	399	361	284	239	248	520*	393*	444*	28	284	89	187	207	259	271	290	308	310	319	316	320	7550
			29	344	366	350	368	349	347	340	141*	174	276	337	424*	29	298	344	273	303	336	299	321	278	290	299	308	311	7476
			30	357	348	380	341	336	341	334	334	340	329	278	291	30	289	244	273	237	240	201	202	211	257	317	338	361	7179
			31													31													

SCALED BY	SPT, JEP
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[Significant portion of hour interpolated.

☐ No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

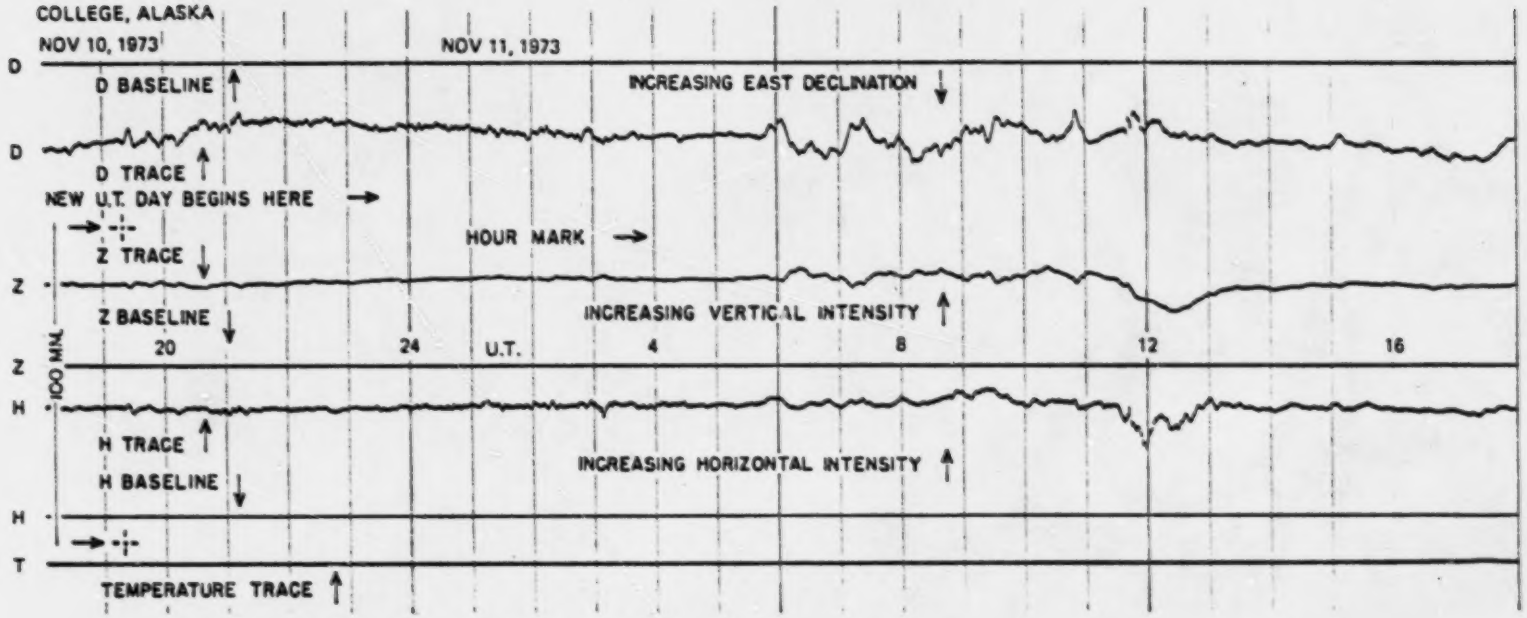
* Derived from Storm Mgph., converted to Normal Mgph.

MONTHLY SUM	220095
MONTHLY MEAN	306
DATES WITH GAPS	

GPO 843-889

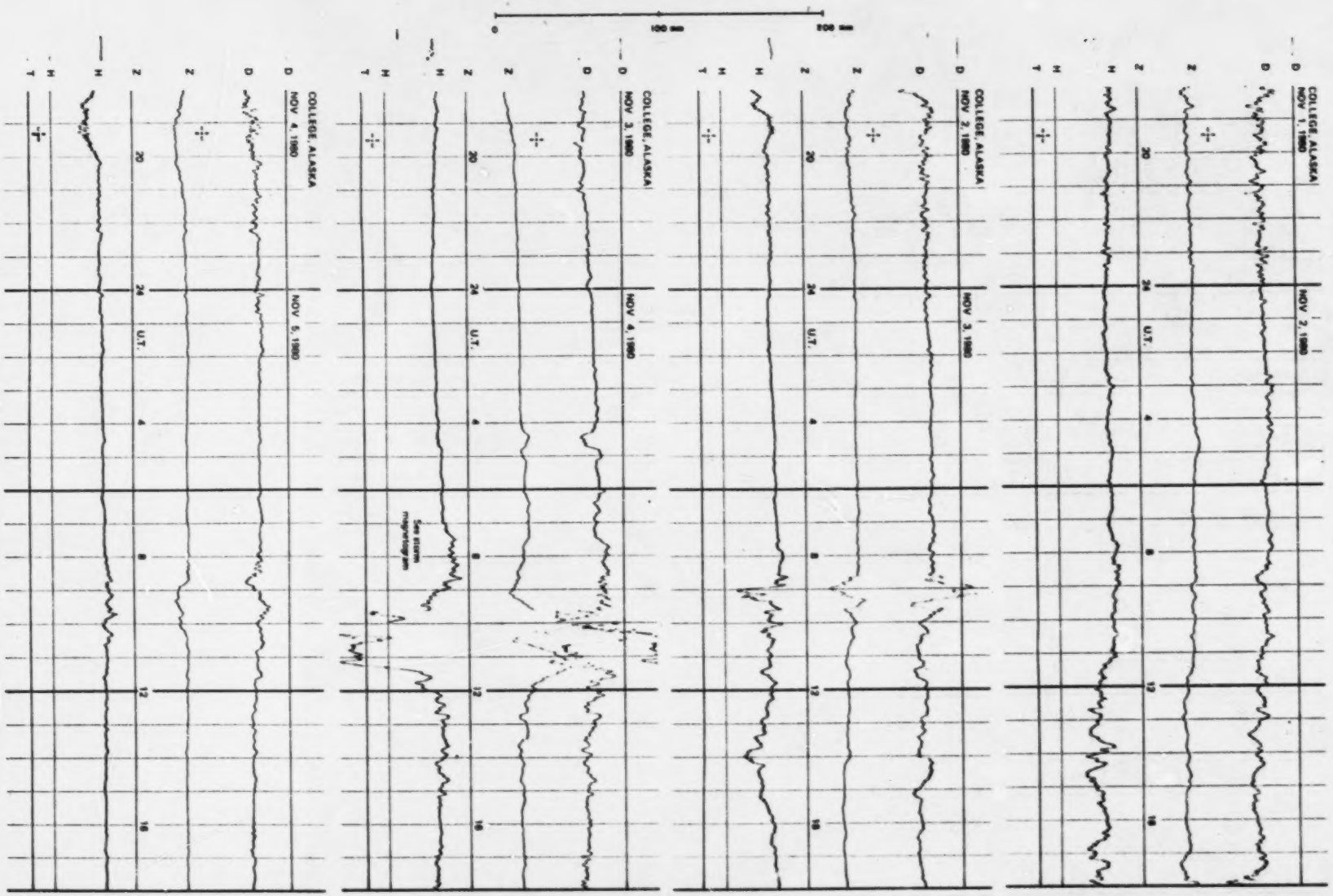
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

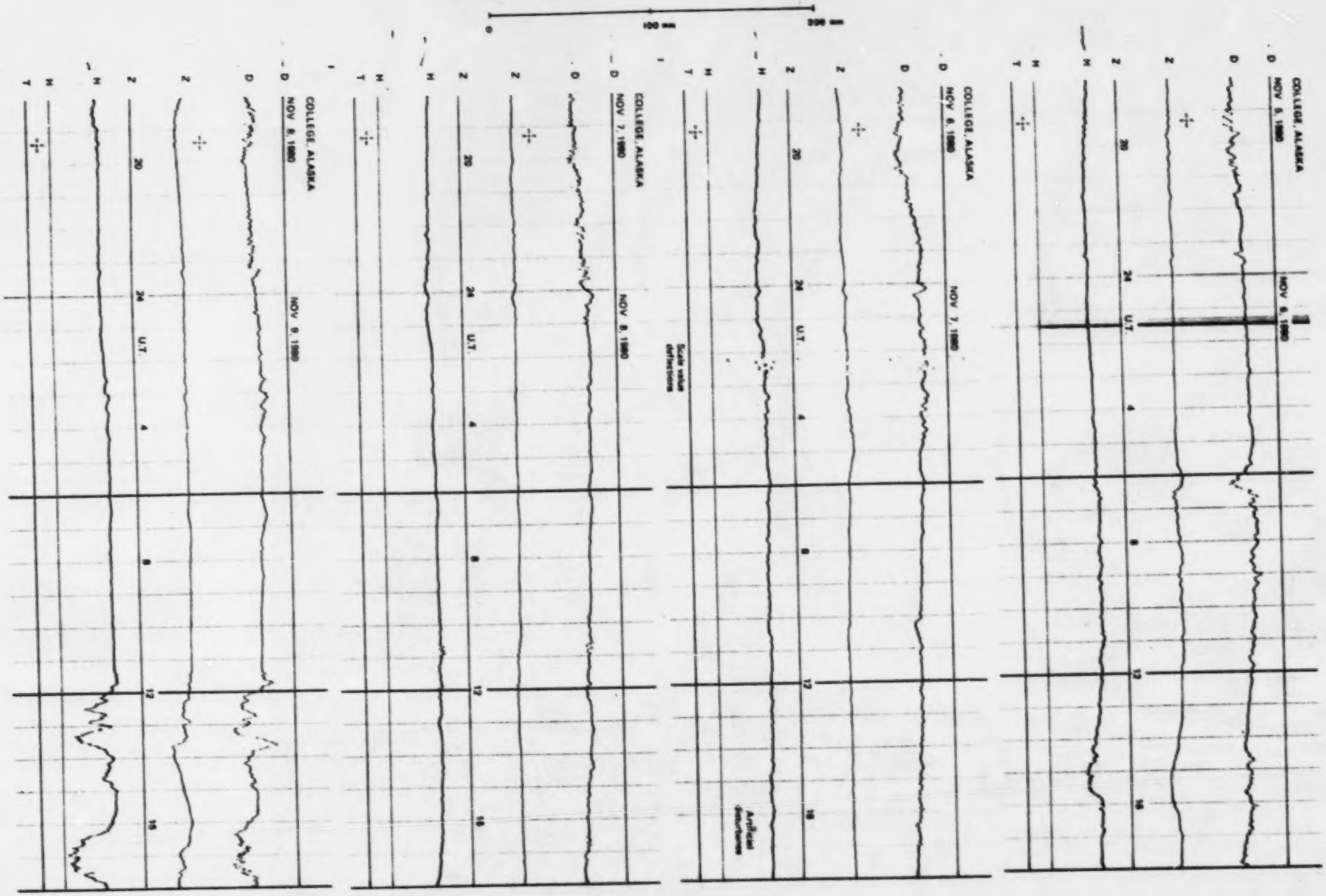


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

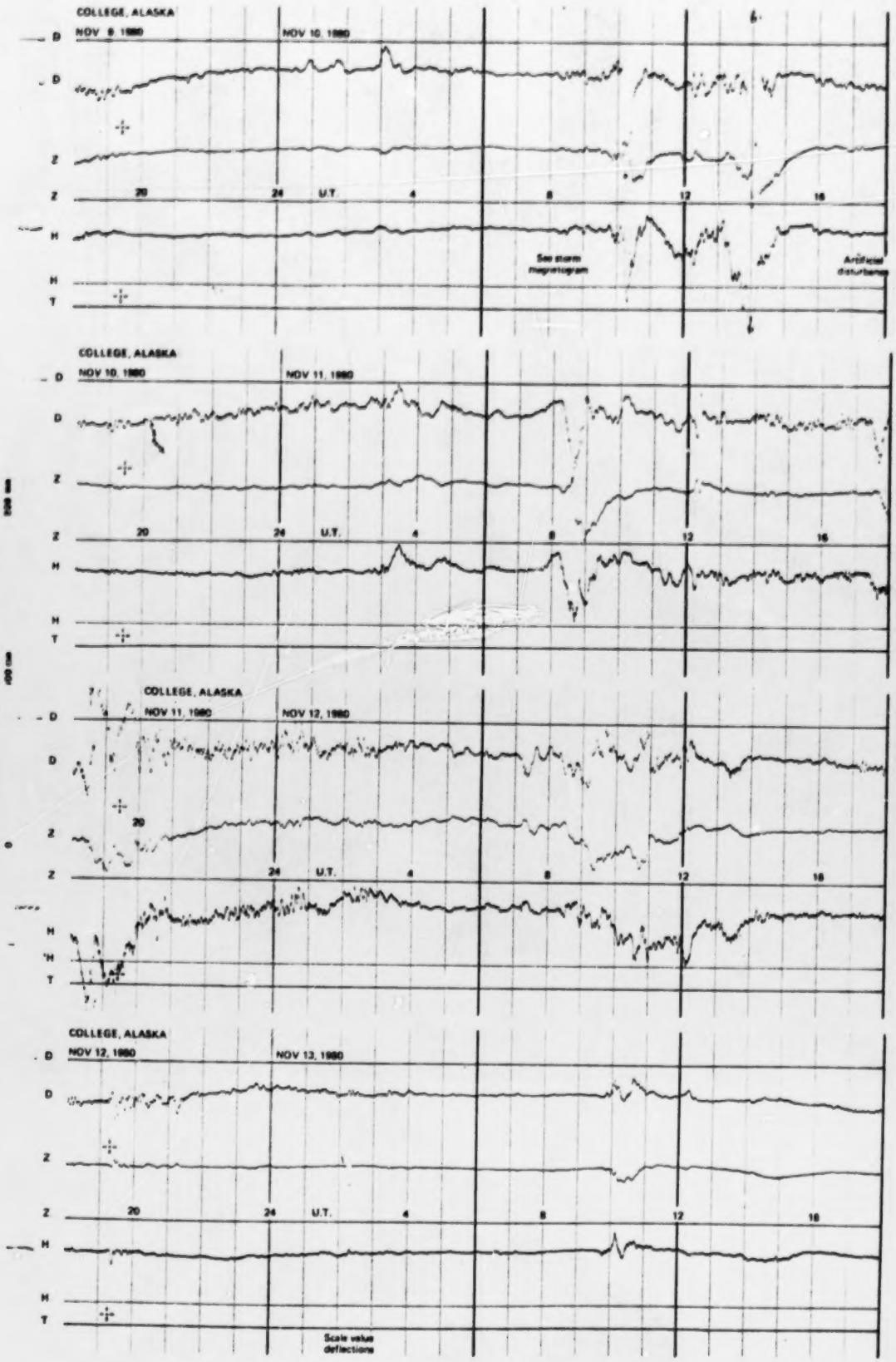
NORMAL MAGNETOGRAMS



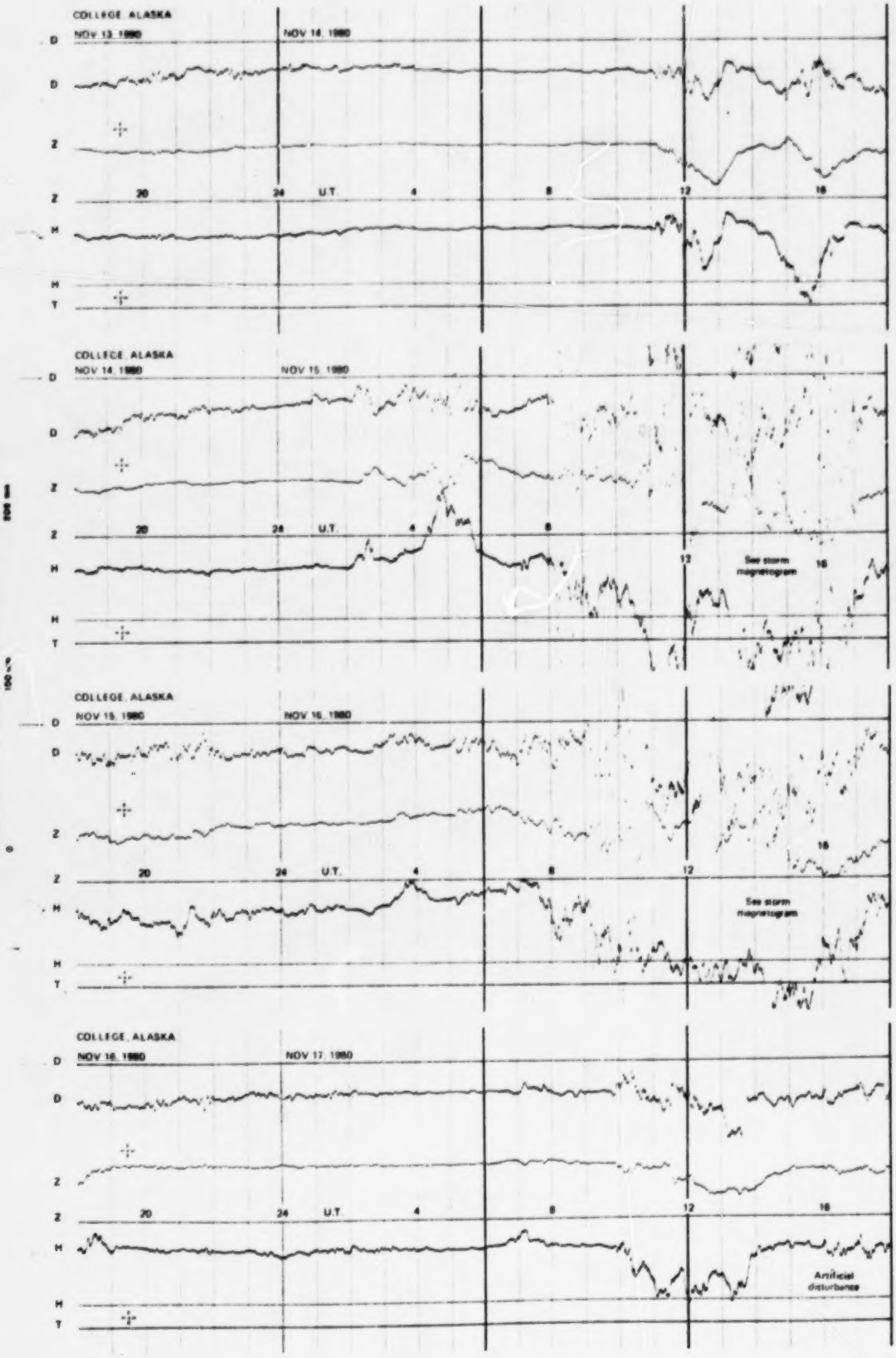
NORMAL MAGNETOGRAMS



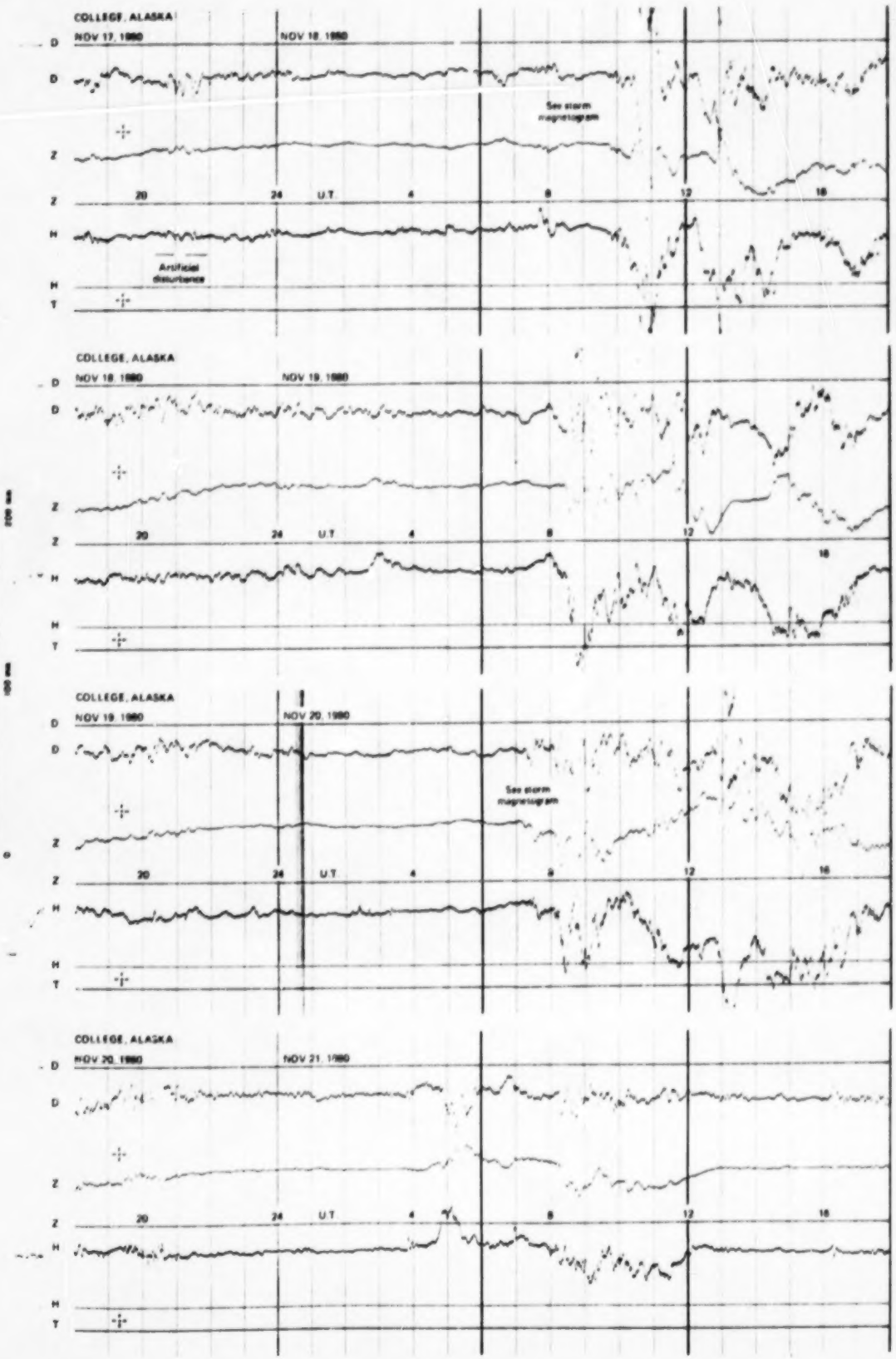
NORMAL MAGNETOGRAMS



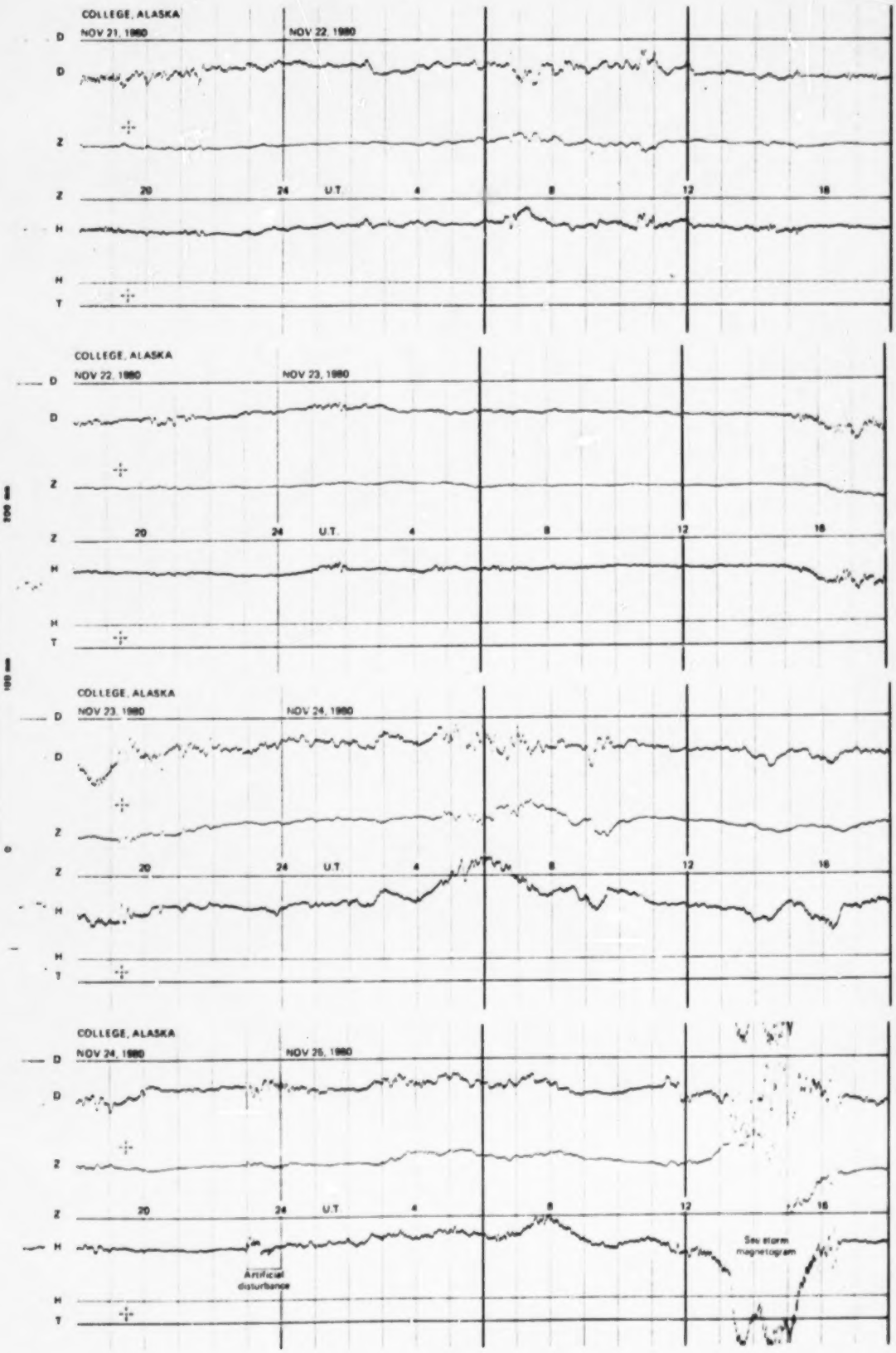
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



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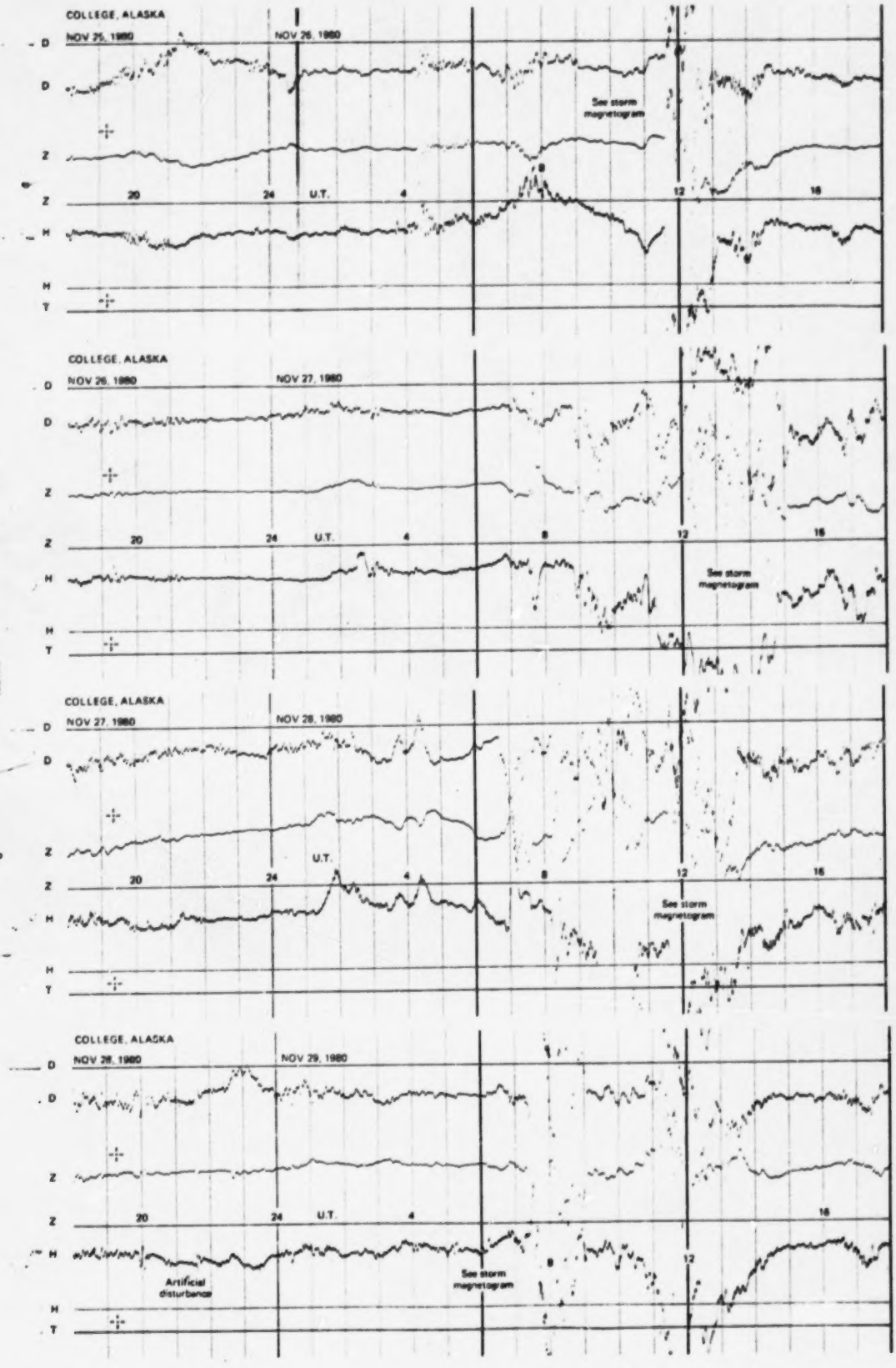
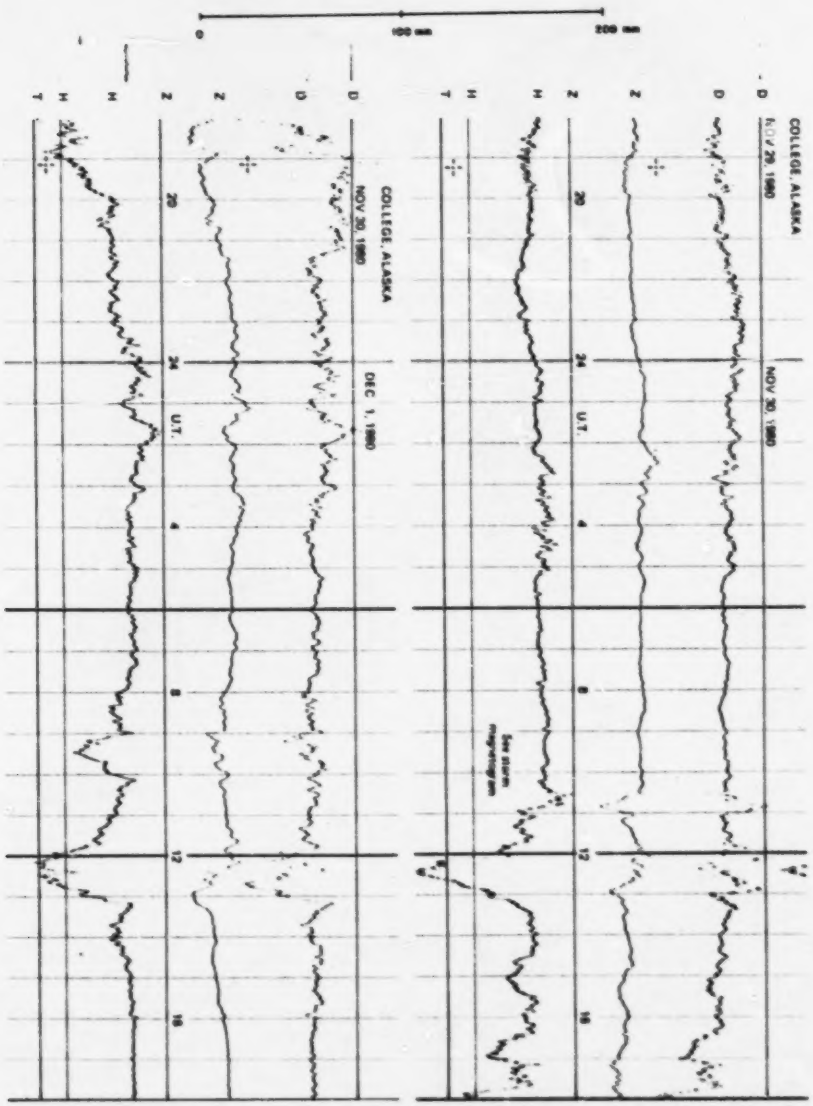
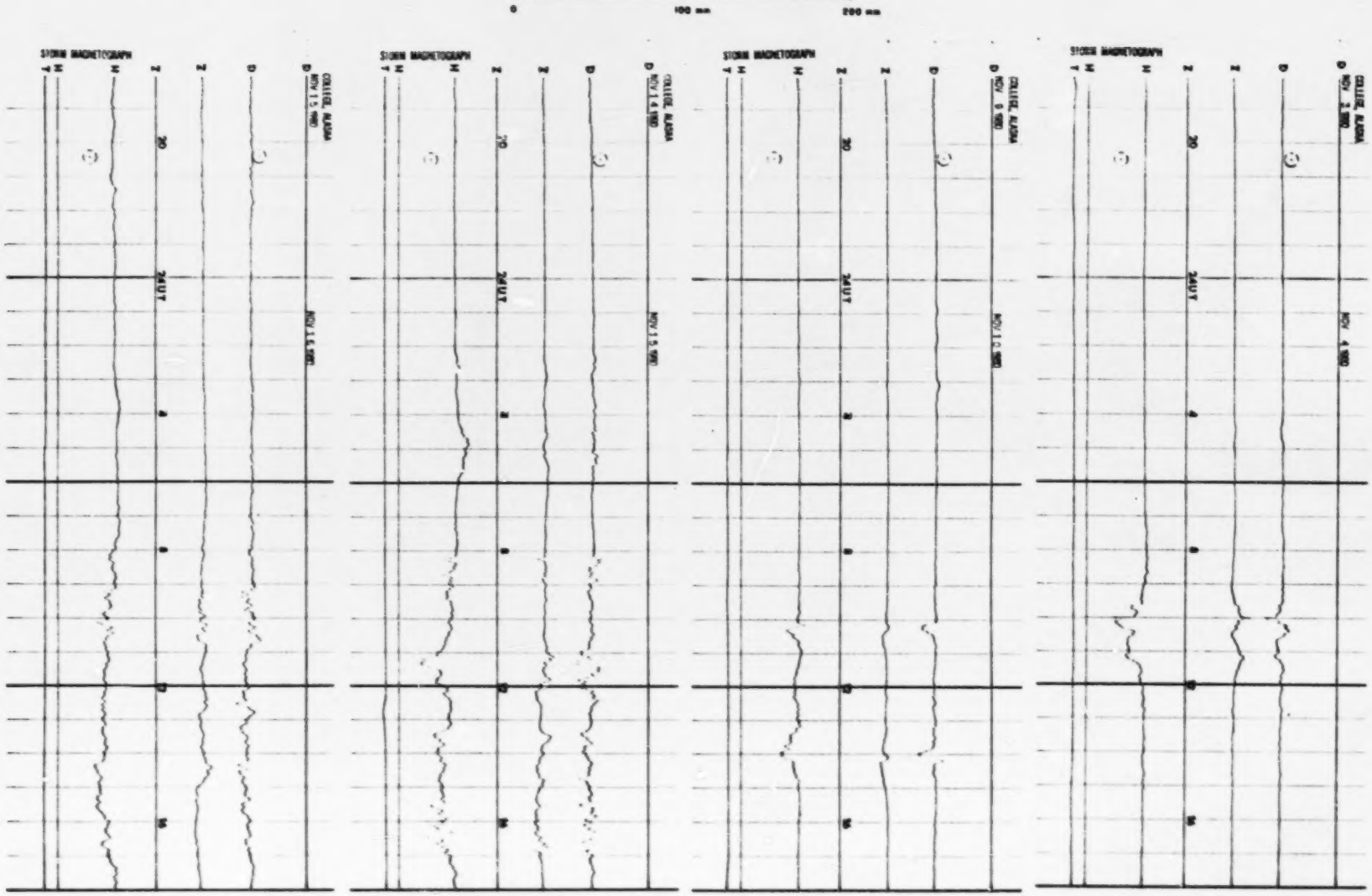


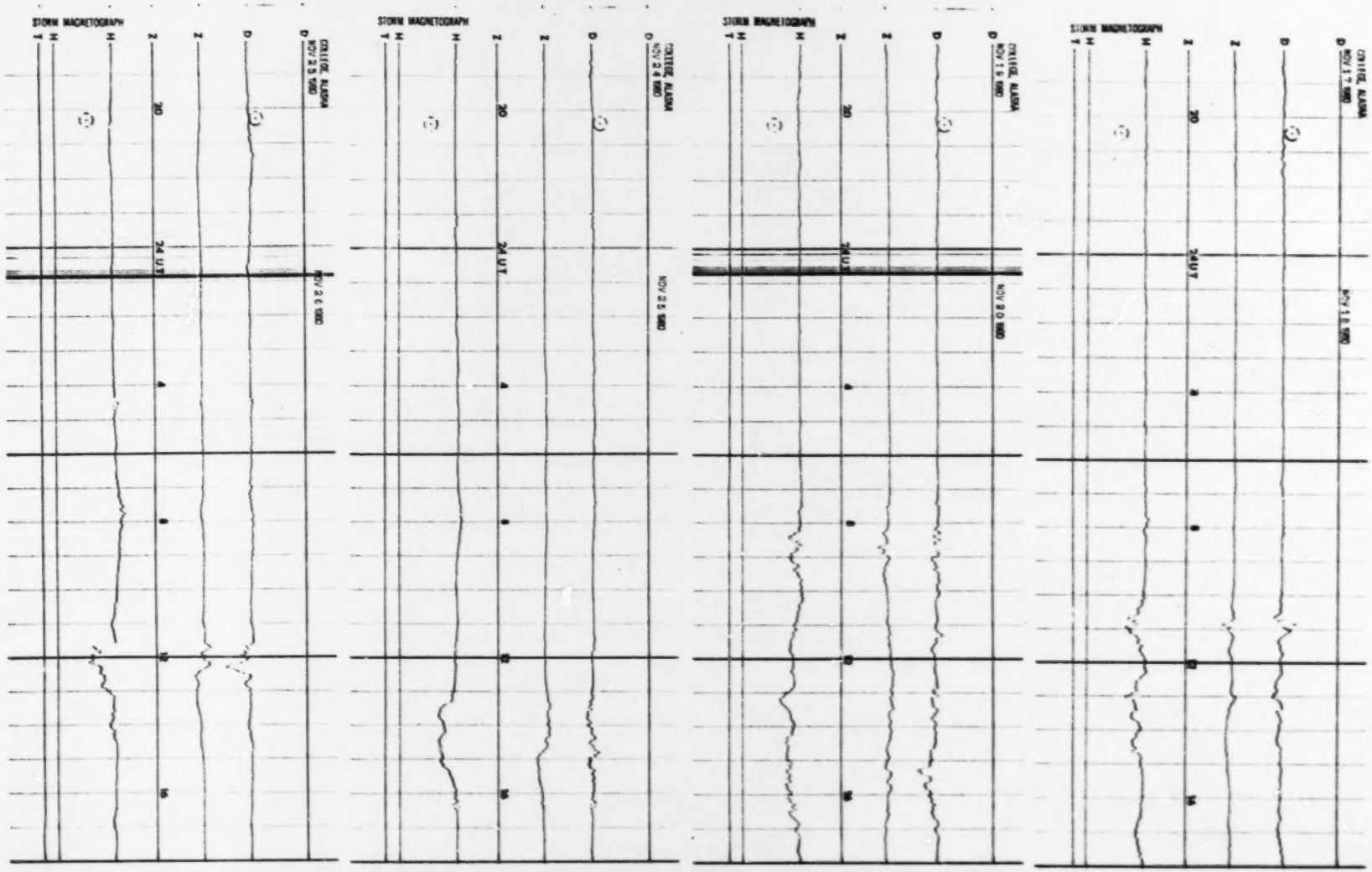
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS